THE GENUS *HABENARIA* WILLD. (ORCHIDACEAE) IN THE BAHAMA ISLANDS

RUBEN P. SAULEDA AND RALPH M. ADAMS

The only reported occurrence of the genus *Habenaria* in the Bahama archipelago was made by Correll (1975), when he discovered a population of *Habenaria odontopetala* Rchb. f. on Grand Bahama Island. Our taxonomic and ecological studies of the native orchids of the Bahama archipelago, including the Turks and Caicos Islands, have resulted in the discovery of two additional species of *Habenaria* distributed within the Bahama Islands: *Habenaria alata* Hook. and *Habenaria quinqueseta* (Michx.) Eaton var. *quinqueseta*. Furthermore, we have found that *H. odontopetala* is not restricted to Grand Bahama Island as previously reported but also occurs sympatrically with *H. alata* on Andros Island.

TAXONOMIC TREATMENT

Habenaria Willd., Sp. Pl. **4:** 44. 1805.

Terrestrial or semiaquatic herbs with fleshy tubers and fibrous roots. Stems erect, leafy, terminating in a raceme. Leaves entire, thin in texture, with basal part sheathing stem. Raceme loosely or densely flowered, bracts usually well developed. Ovary pedicellate, slender or broadly-winged. Sepals free, similar or dissimilar; dorsal sepal concave, forming a hood over column; lateral sepals spreading or reflexed. Petals free, simple or bipartite, connivent with dorsal sepal. Lip simple or tripartite with a spur at the base. Column short, sigmata 2, confluent, protruding around and below aperture of nectary, rostellum absent, anther 2-celled with anther canals separate. Pollinia granular on distinct caudicles.

Lectotype: *Orchis habenaria* L. (Kraezlin in Engl. Bot. Jahrb. **16:** 58, 1892).

KEY TO THE SPECIES IN THE BAHAMA ISLANDS

1. Lip simple or obscurely dentate at base on either side, basal appendage of petals absent or short 2

1a. Lip distinctly tripartite, basal appendage of petals as long as or longer than petal, ovary ribbed .... *H. quinqueseta*

2. Petals lanceolate, acute, ovary distinctly 3-winged *H. alata*
2a. Petals oblong-quadrate to linear-oblong, apex of petals 3-lobed, ovary ribbed .... *H. odontopetala*

1. **Habenaria alata** Hook., Exot. Fl. **3:**t169. 1826. (Fig. 1).

HOLOTYPE: St. Vincent, *Guilding s.n.* (K, photograph seen*).

Plant terrestrial, erect, to 68 cm tall; roots many, fibrous, with one or two spherical to ovoid fleshy tubers; stems round, uniform in thickness throughout, simple, erect, leafy, completely enclosed by leaf-sheaths, to 46 cm tall; leaves soft and thin in texture, lanceolate to narrowly ovate, acute to subacuminate, articulated with the leaf sheaths, to 17 cm long, 2.5 cm wide, decreasing in size toward the inflorescence and base, basally becoming bract-like; inflorescence terminal, racemose, to 22 cm tall, 6–20 flowers, flowers pale green to greenish-yellow, fleshy; floral bracts ovate to linear-lanceolate, acuminate, longer than ovaries, to 3.0 cm long, 0.5 cm wide; ovary pedicellate, broadly 3-winged, to 2.0 cm long; dorsal sepal broadly ovate to suborbicular, concave, cuspidate, margins papillose, to 9 mm long, 7 mm wide; lateral sepals obliquely ovate, cuspidate, margins papillose, to 9 mm long, 6 mm wide; petals lanceolate, acute, to 8 mm long, 3 mm wide, anterior margin with a small dentiform lobe; labellum entire, directed forward, linear-lanceolate to ligulate, subobtuse, basal lobes obscure or absent, to 8 mm long, 2 mm wide, spur or nectary clavate to linear, arcuate, to 14 mm long, 1.5 mm thick; column short, to 3 mm long, 3 mm wide; capsule erect, prominently 3-winged, to 2.0 cm long, 7 mm thick.

DISTRIBUTION IN THE BAHAMA ISLANDS: **Northern Andros,** high coppice, 6 mi NW Love Hill settlement, *Sauleda 1974* (FTG), *1992,* (AMES, FTG, K, NY, US).

GENERAL DISTRIBUTION: **Cuba,** *Shafer 8326,* (NY); Isle of Pines, *Britton, Britton & Wilson 14568* (NY); **Haiti,** *Holdridge 851,* (NY); **Dominican Republic,** *Liogier 21290* (NY); **Jamaica,** *Harris 7526* (NY); **Puerto Rico,** *Hess 3399* (NY); **Martinique,** *Duss 4487* (NY); **Guadeloupe,** *Duss 3357* (NY); **Antigua,** *Box 557* (US); **Tobago,** *Broadway 3051* (NY); **Mexico,** *Purpus 7418* (NY); **Guatemala,** *Turckheim 1101* (US); **Costa Rica,** *Brenes 1643* (NY); **El Salvador**

*All specimens cited have been examined unless otherwise noted.

Figure 1. *Habenaria alata* Hook. A, flowering plant; B, inflorescence; C, flowers, frontal and lateral views; D, sepals, petals, labellum and nectary, frontal view.

Calderon 1292 (US); **Honduras** *Standley 29155* (US); **Panama,** *Ebinger 784* (US); **Colombia,** *Pennell 1792* (NY); **Venezuela,** *Allart 164* (US); **Ecuador,** *Haught 3312* (US).

REPRODUCTIVE BIOLOGY: Flowers from September to November. Capsule dehiscence occurs approximately one month after pollination.

ECOLOGY: This perennial species is found growing terrestrially from April to December in soil pockets in pleistocene limestone. It grows in open, sunny, usually disturbed, areas within high coppices—high canopy (5–12 m) forests occurring on pleistocene limestone ridges and dominated by *Lysiloma latisiligua* (L.) Benth., *Swietenia mahagoni* Jacq., *Mastichodendron foetidissimum* (Jacq.) H.J. Lam., *Coccoloba diversifolia* Jacq., *Clusia rosea* Jacq., *Metopium toxiferum* (L.) Krug & Urban, and *Bursera simaruba* (L.) Sarg..

2. **Habenaria odontopetala** Rchb. f., Linnaea **18:** 407. 1844. (Fig. 2).

Habenaria strictissima Rchb. f. var. *odontopetala* (Rchb. f.) L.O. Williams, Bot. Mus. Leafl. Harv. Univ. **7:** 184. 1939. HOLOTYPE: Mexico, *Leibold s.n.* (W).
Habenaria garberi Porter, Bot. Gaz. **5:** 135. 1880.
Platanthera garberi (Porter) Chapman, Fl. S. US. ed. **3:** 486. 1897.
Habenella garberi (Porter) Small, FL. S.E. US. 316. 1903. HOLOTYPE: Manatee, Florida, *A.P. Garber 315* (NY).

Plant terrestrial, erect to 65 cm tall; roots many, fibrous, with one or two spherical to ovoid fleshy tubers; stem round, simple, erect, leafy, completely enclosed by leaf-sheaths, to 38 cm tall; leaves soft and thin in texture, lanceolate to elliptic, acute, articulate with the leaf sheaths, decreasing in size toward the inflorescence and base, basally becoming bract-like; inflorescence terminal, racemose, to 27 cm tall, 3–25 flowers, flowers fleshy, pale green to greenish-yellow; floral bracts lanceolate to ovate, acuminate, to 2 cm long, 8 mm wide; ovary pedicellate, ribbed, to 2 cm long; dorsal sepal broadly ovate, cucullate, to 7 mm long, 5 mm wide; lateral sepals spreading or reflexed, obliquely ovate, acute, to 7 mm long, 5 mm wide; petals oblong-quadrate to linear-oblong, apex 3-lobed, to 6 mm long, 2 mm wide, anterior margin with a small dentiform lobe; labellum entire, pendent, linear to linear-clavate, obtuse, basal lobes obscure, to 1.2 cm long, 1.5 mm wide, spur or nectary cylindric, to 2.2 cm long, 1 mm thick; column short, to 3.0 mm wide; capsule ribbed, to 2.0 cm long, 8 mm thick.

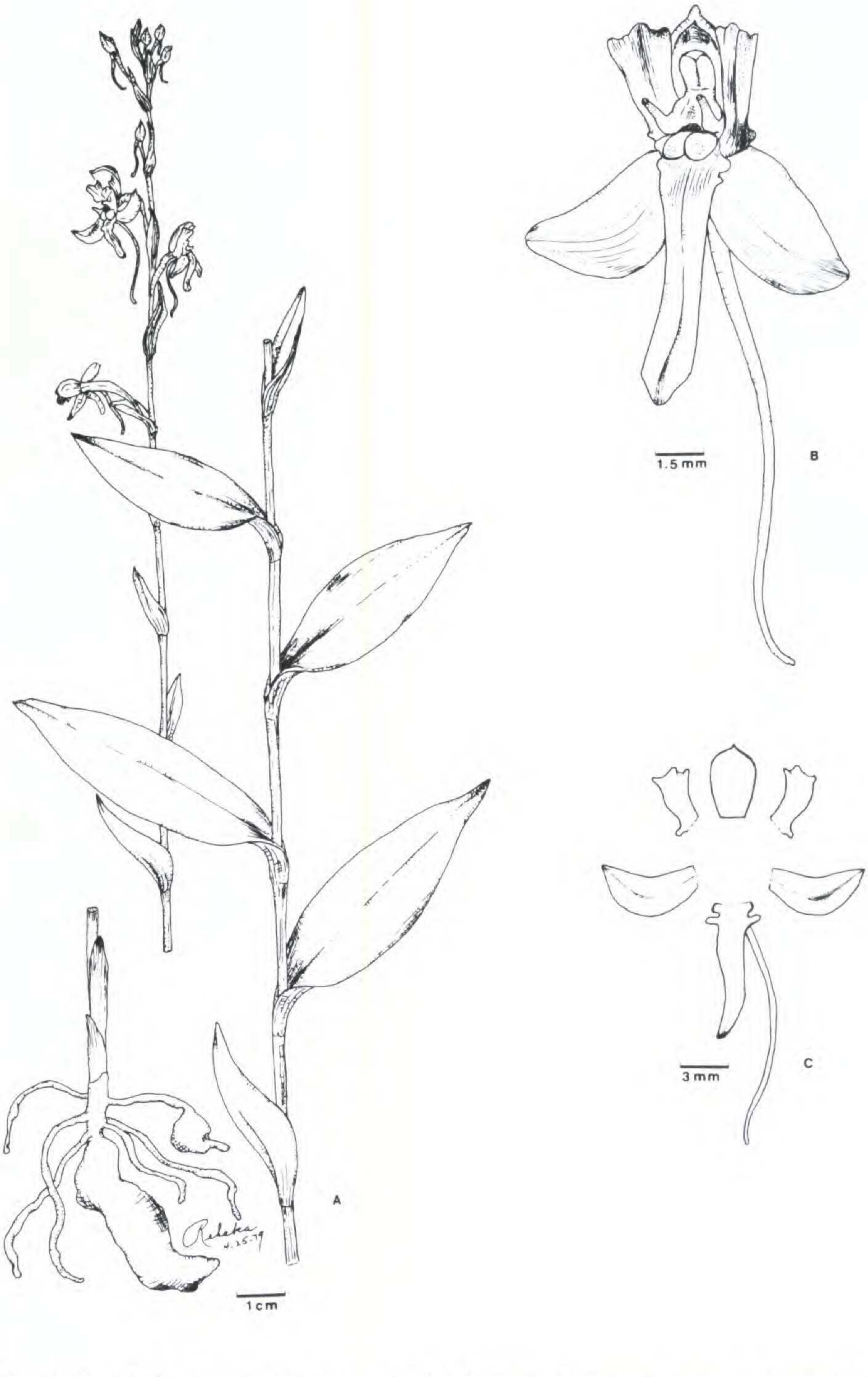

Figure 2. *Habenaria odontopetala* Rchb. f. A, flowering plant; B, flower, frontal view; C, sepals, petals, labellum and nectary, frontal view.

DISTRIBUTION IN THE BAHAMA ISLANDS: **Northern Andros,** high coppice, 6 mi NW Love Hill settlement, *Sauleda 1993* (FTG), *1994* (FAU). **Grand Bahama,** in wet soil of hammock, north side of Sancombe Drive, 0.5 mi east of Balao Road, Freeport, *D.S. Correll, J. Popenoe & P.H. Fluck 40452* (FTG).

GENERAL DISTRIBUTION: **Florida,** *Correll 47697* (NY); **Cuba,** *Eckman 6807* (NY); **Guadeloupe,** *Stehle 2462* (NY); **Mexico,** *Dressler 1491* (NY); **Guatemala,** *Ortiz 2023* (NY); **Costa Rica,** *Brenes 1566* (NY); **Panama,** *Allen 820* (US); **Venezuela,** *Maguire 32733* (NY).

REPRODUCTIVE BIOLOGY: Flowers from September to November. Capsule dehiscence occurs approximately one month after pollination.

ECOLOGY: This perennial species is found growing terrestrially from April to December in soil pockets in pleistocene limestone. It grows in high coppices in deep shade or sunny open disturbed areas.

3. **Habenaria quinqueseta** (Michx.) Eaton, Man. ed. **5:** 253, Sept, 1829. var. **quinqueseta.** (Fig. 3).

Orchis quinqueseta Michx., Fl. Bor-Am. 2:155. 1803.
Habenaria quinqueseta (Michx.) Sw. ex Wikstrom, Adnotationes Botanicae, 46. 1829 (Month not known).
Habenaria michauxii Nutt., Gen. N. Am. Pl. **2:** 189. 1818.
Mesicera quinqueseta (Michx.) Raf. Neog. 4. 1825.
Mesicera michauxii (Nutt.) Raf. Fl. Tellur. 2:39. 1837.
Platanthera michauxii (Nutt.) Wood, Class-Book 685. 1861.
Orchis michauxii (Nutt.) Wood, Am. Bot. Flor. 328. 1870. HOLOTYPE: Carolina, *Michaux s.n.* (P, photograph seen).
Habenaria simpsonii Small, Fl. S.E. US. 315. 1903. TYPE: In dry hammocks near Manatee, Florida, *Simpson s.n.* (HOLOTYPE: NY., ISOTYPE: US).

Plant terrestrial, erect, to 48 cm tall; roots many, fibrous, with one or two spherical to ovoid fleshy tubers; stem simple, erect, leafy, completely enclosed by leaf sheaths, to 28 cm tall; leaves soft and thin in texture, oblong-elliptic to oblong-obovate, obtuse to acute, articulate with the leaf bases, usually decreasing in size toward the inflorescence and base, basally becoming bract-like, to 10 cm long, 4 cm wide; inflorescence terminal; racemose, to 20 cm tall, 1–18 flowers, flowers white to greenish-white, fleshy; floral bracts ovate-lanceolate, acute to acuminate, to 2.5 cm long, 4 mm wide; ovary pedicellate, ribbed, slender, to 2.5 cm long; dorsal sepal oblong-

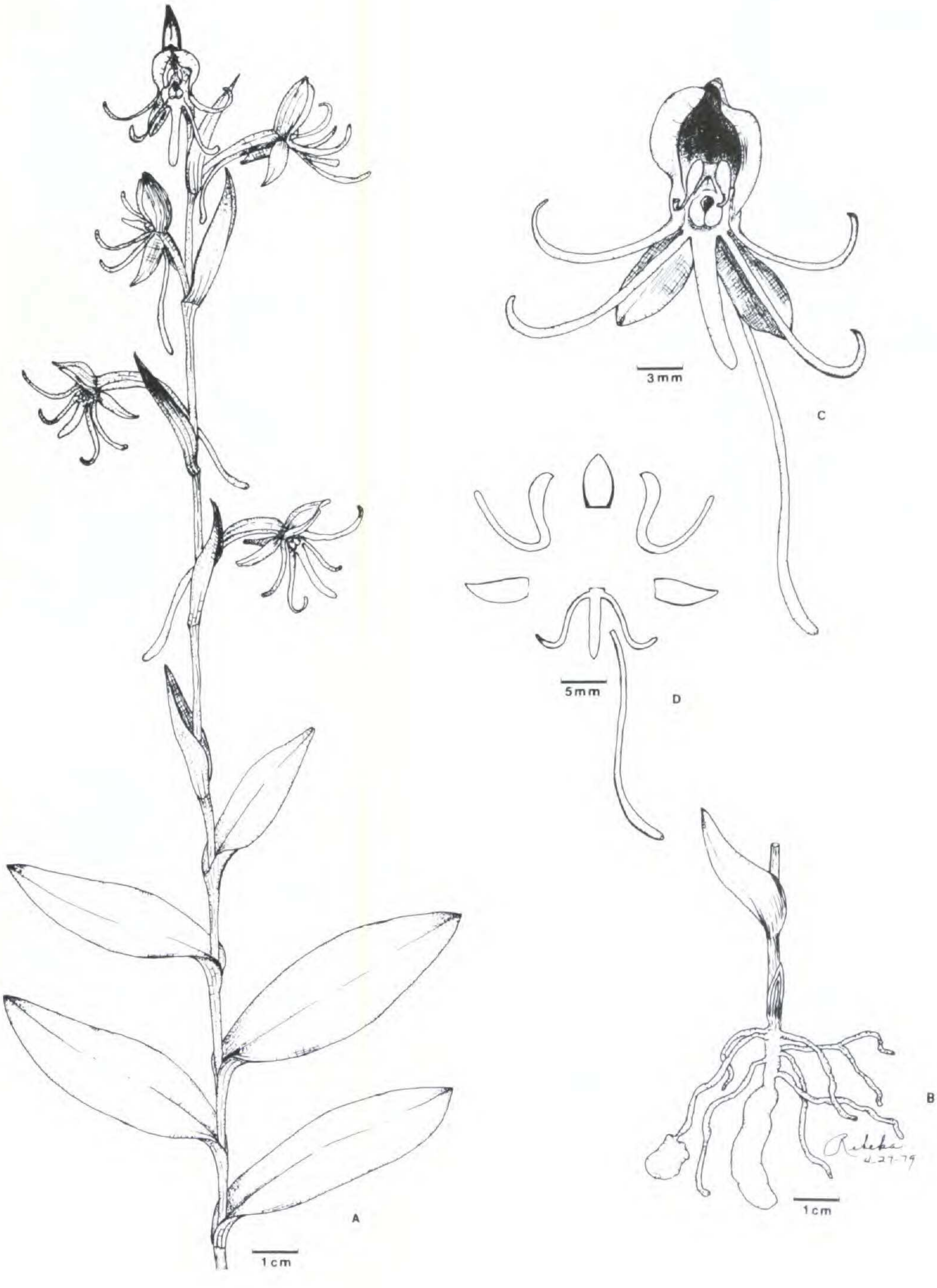

Figure 3. *Habenaria quinqueseta* (Michx.) Eaton var. *quinqueseta*. A, flowering plant, distal portion; B, plant, basal portion; C, flower, frontal view; D, sepals, petals, labellum and nectary, frontal view.

elliptic to orbicular, obtuse, concave, to 9 mm long, 7 mm wide; lateral sepals obovate to oblanceolate, to 1.2 cm long, 4 mm wide; petals bipartite, posterior division ligulate, falcate, subacute to acute, to 8 mm long, 2 mm wide, anterior appendage filiform, recurved, to 1.4 cm long; labellum tripartite, posterior divisions filiform, apex recurved, to 2.2 cm long, middle division ligulate, obtuse to subacute, to 2.0 cm long, 1.5 mm wide, spur or nectary slender, linear to clavate, recurved to 3.8 cm long, 3 mm thick; column short to 2.8 mm long, 2.8 mm wide; capsule erect, ribbed to 2.5 cm long, 8 mm thick.

DISTRIBUTION IN THE BAHAMAS: **Northern Andros,** high coppice, 6 mi NW Love Hill settlement, *Sauleda 1968* (FAU), *1969* (FTG), *1970* (K), *1971* (AMES), *1972* (US), *1973* (NY); in grassy soil 3–4 mi SW Staniard Creek, near Blue Hole, in fruit, dehisced, *Correll 49375* (FTG). **Grand Bahama,** small colony at edge of hammock near Freeport, *Correll and Worsfold 50383* (FTG).

RHODORA — Sauleda & Adams — Galley 4

GENERAL DISTRIBUTION: **Florida,** *Garber 37* (NY); **Cuba,** *Howard 4699* (NY); **Haiti,** *Leonard & Leonard 11388* (NY); **Dominican Republic,** *Howard & Howard 9173*, (NY); **Mexico,** *Dressler 2500* (NY).

REPRODUCTIVE BIOLOGY: Flowers from August to October. Capsule dehiscence occurs approximately one month after pollination.

ECOLOGY: This perennial species is found growing terrestrially from March to November in low grassy open areas in direct sunlight and occasionally in partial shade at the edge of high coppices. It prefers temporarily flooded habitats or areas near permanent ponds where soil moisture content is high. In direct sunlight plants develop short stems with short internodes, the leaves forming a rosette. In partial shade the stem is more elongate with internode lengths considerably longer.

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DEPARTMENT OF BIOLOGICAL SCIENCES
FLORIDA ATLANTIC UNIVERSITY
BOCA RATON, FLORIDA 33431